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CONTENTS

ARTICLE I
Annual Discourse, delivered at the Re-
quest of the Knickerbocker Club
RAYMOND, M. D.
ARTICLE II
Observations on the Influence of Age

ARTICLE III
The Influence of Age on the Course of
Disease
RAYMOND, M. D.
ARTICLE IV
Proceedings of the Society
ARTICLE V
Proceedings of the Council

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ARTICLE I.

ON SOME OF THE
DISEASES OF THE KNEE-JOINT.

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[Delivered before the Society, May 31, 1837.]

MR. PRESIDENT AND GENTLEMEN OF THE SOCIETY:

A PRACTICAL subject seems to be the most suitable for this occasion. The design of the annual discourse is not so much to impart information as to elicit it; and this can be best effected by treating on some obscure point connected with our profession, and thus exciting farther inquiry and observation.

There is not time for a full treatise on any subject; and if there were, I do not feel that I could offer one, that would be either new or instructive to those whom I have the honor to address. But it may be in my power to suggest some topics, that may be thought worthy of farther investigation; and I do not hope to do any thing more than this.

Such, unfortunately, is the condition of the healing art, even at the present day, that there are many points, in all its departments, in which the pathology

is obscure, the diagnosis difficult, and the method of treatment, consequently, uncertain. We look forward, it is true, with confidence, to a better state of things ; already, brighter prospects are opening before us, and the philosophical mode of investigation that has recently been adopted in the science of medicine, cannot fail, if judiciously pursued, to lead to the most auspicious results. But the dawn has only commenced, and it will yet be long before the darkness is altogether dissipated. This cannot be accomplished, without the untiring and successive labors of many. The experience of no one man, however extensive it may be, is sufficient for the purpose. There is a duty, then, that devolves on all, from which no one should shrink.

Every one who hears me can, no doubt, call to mind many subjects, both in medicine and in surgery, that are still obscure ; and among these, I think, that the diseases of the joints hold a prominent rank. I therefore propose to offer a few remarks on some of the morbid affections of the knee-joint. It will, of course, be in my power to make only a few suggestions on these diseases ; but I trust they may lead others to a careful examination of them.

There are many reasons for examining this subject with great care. The joints are often diseased ; sometimes as the result of injury, and at others the trouble comes on spontaneously. The frequency of these diseases may be, in part, owing to the exposed situation of some of the joints, rendering them liable to accidents and injuries of various kinds, and subjecting them to inconvenience from changes of tem-

perature. But this cannot account for all of them. The extent and variety of their motions have, no doubt, some influence in the production of many of their morbid affections.

These affections, too, are usually obscure in their nature, and, consequently, difficult to manage. They are frequently insidious in their attack, and often obstinate in their character; producing, sometimes, permanent lameness, and occasionally terminating in loss of limb or life.

From the great degree of obscurity that not unfrequently attends some of these cases, and from the unpleasant manner in which they occasionally terminate, regular practitioners are often led to abandon them altogether, and the patients are consigned to the hands of those, who sometimes have more boldness than skill.

So great is this obscurity, that the same disease, as has been justly remarked, is known under a variety of names, indicating a difference of character; and several diseases of the articulations, differing essentially from each other in some respects, are often confounded under a common name. It is obvious, that under such circumstances, a judicious mode of treatment would not probably be adopted.

At first view, it may seem singular, that this class of diseases is not more readily understood, when we consider, that the situation of most of the joints is such, that we can examine them with great ease, and perceive at once any change in their form or size.

But it should be recollected, on the other hand,

that the joints are complex in their structure, composed of parts which are dissimilar in character, and which are endowed with very different properties. These are the synovial membrane, which lines the capsular ligaments, the articulating cartilages, and the bones. Each of these is, no doubt, oftentimes the seat of disease, while the other parts remain, for a time, wholly unaffected.

It would be an important step toward a better knowledge of the diseases of the joints, if we could decide, in every case, in which of these parts the disease began. This is, by no means, an easy task. Morbid affections of the joints do not cause death at an early period, and opportunities, therefore, are not afforded, of making an examination of the parts at the beginning of the disease, unless the patient should be cut off by some other complaint. These cases have been so rare, or advantage has not been taken of all that have occurred, or, perhaps, from both these causes, it has happened, that there is still much obscurity on the subject. We are not able to determine, in every instance, whether it be the synovial membrane, or the cartilage, or the bone, that is affected. It is, no doubt, true, that all of them may be, and very often are, diseased; but it is highly probable, that the disease begins in one part, and gradually extends to the others.

To Bichat, perhaps, more than to any other individual, belongs the credit of having first brought into practice the method of investigating disease according to the texture which is affected; though we perceive, in the writings of Mr. John Hunter, that

the importance of this mode did not escape his penetrating mind. For its application to the diseases of the joints, we are indebted to Sir Benjamin C. Brodie;* and it may be regarded as the most important step that has ever been taken on the subject. This plan I shall pursue in the remarks that I am about to offer, and shall speak of those diseases of the knee which I propose to notice, as they affect the synovial membrane, the articulating cartilages, and the bones.

1st. *Of inflammation of the synovial membrane.*

The synovial membrane, which forms the lining of the interior of the joints, has a close resemblance to the serous membranes. It differs from them, however, slightly in its functions; its office being to secrete the synovia, a fluid which is similar to serum, but which contains more albumen.

The synovial membrane is the frequent seat of acute inflammation. It arises sometimes from accidents, sometimes from exposure to cold, and occasionally it comes on without any assignable cause.

* This gentleman has done more to advance the knowledge of the diseases of the joints, than any other individual. He first adopted the method of investigating, separately, the affections of the different parts of which the articulations are composed. By this means, he has thrown great light on this obscure subject.

I have availed myself very freely of his suggestions. At the same time, I deem it proper to say, that I have advanced nothing of a practical nature, that is not the result of my own experience; and I am happy to add, that this has, in most instances, fully confirmed what he had before stated. The world is deeply indebted to him for his invaluable labors; and I hardly know a more useful, safe and judicious work, in the whole range of practical surgery, than his "*Observations on the Diseases of the Joints.*"

It is most often met with in those joints that are least protected by the soft parts ; and, consequently, it is supposed, that changes of temperature have no small degree of influence in its production. It varies very much in intensity. In severe cases, it is attended with great pain at its commencement, and the general system is much affected, the appetite being impaired or altogether lost, the secretions diminished, and the circulating system highly excited. It is most common in adults, and rarely occurs spontaneously in young children.

When the whole or the greater part of the synovial membrane is inflamed from the beginning of the attack, the pain is felt throughout the joint, and swelling comes on almost immediately. But when the inflammation is confined, at the onset, as it often is, to one part of the membrane, the pain is also limited to that spot, but extends with the disease, which usually involves the whole articulation. In this case, the swelling is not discoverable at first.

There is something peculiar about the swelling. The whole joint is not swollen in the beginning ; the enlargement is perceptible only in certain parts, as it arises, in the early stages, from an increased secretion of synovia, which distends the ligaments. It is, consequently, most apparent on the anterior and lower part of the thigh, under the extensor muscles, and on each side of the ligament of the patella. At this period, a fluctuation can usually be perceived ; but if the disease continues, the ligaments become so much thickened by the deposition of fibrin, that it cannot be detected, and the form of the swelling is also changed.

If the inflammation be severe, the integuments are discolored at an early period; but it is no unusual thing, to see this discoloration limited to a part of the joint, and not extending over the whole of it, till the disease has continued for some days. In fact, I have seen some cases, and those not of a very mild character, in which there was only a slight redness on a circumscribed spot during the whole course of the affection. The color is somewhat peculiar, resembling the blush of red that is seen in the beginning of erysipelatous inflammation.

There are various modes in which acute inflammation of the synovial membrane may be said to terminate; or perhaps it would be more correct to say, that there are various processes set up during its progress. These are increased secretion of synovia; deposition of fibrin, producing a thickening of the ligaments, and occasionally loose flakes of fibrin are thrown out in the cavity of the joint; suppuration and ulceration of the synovial membrane. These, of course, do not all take place in every instance; the disease is not unfrequently arrested at an early period, and the limb is restored to its former usefulness; the increased quantity of synovia, the only effect of the morbid action, being gradually absorbed. At other times, even when recovery takes place, a great degree of stiffness remains, owing to the thickening of the ligaments. And occasionally, even under the best treatment, pus is secreted in the cavity of the joint, and ulceration of the synovial membrane, in most cases, precedes, accompanies, or follows its formation. When this is the case, the articulating

cartilages are also very apt to ulcerate, and, in a great majority of such cases, amputation is the only means we have of saving the life of the patient.

Perhaps there is no better example of the formidable symptoms which sometimes accompany acute synovial inflammation, than what is occasionally seen as the consequence of a wound through the capsular ligament of the knee-joint. It is, no doubt, true, that this accident often does well, the wound healing readily by the first intention. But it is also true, that a simple incised wound of the knee, which penetrates the joint, will sometimes be followed by the most disastrous consequences. If life and limb are saved, permanent lameness may be the consequence, even though the patient is in good health at the time of the accident. In cases of this kind, suppuration takes place, not only in and about the articulation, but abscesses form at some distance from it, both on the thigh and leg. The constitutional symptoms are severe; the pain is excruciating; there is an entire loss of appetite, with great prostration of strength; and hectic fever, with night sweats, comes on at an early period. At such a time, an operation seems to offer the only chance for the life of the patient; and yet, the condition of the soft parts is frequently such as to forbid its performance.

It should, however, be remarked, on the other hand, that, notwithstanding these unfavorable appearances, such cases sometimes ultimately do well. If the system has not been broken down by intemperance or previous disease, there is still hope, that its powers may rally; and amputation, therefore,

should be deferred as long as it can be done with prudence. If recovery takes place, the limb will be stiff for some time, if not permanently; and yet, it occasionally happens, that its powers of motion are by degrees almost entirely restored.

Acute inflammation of the synovial membrane sometimes comes on in consequence of rheumatism, gout, syphilis, or the excessive use of mercury. In either of these cases, it is not so severe, and the pain is less acute, than when it is strictly a local disease, arising spontaneously, or coming on from injury. It also yields more readily, when properly managed.

The *treatment* of acute synovial inflammation is principally local. Though entire rest of the limb is very important, it is hardly necessary to direct it, as motion gives so much pain, that the patient has no disposition to move it.

Topical bleeding and cold lotions are among the most powerful means of preventing suppuration; but if, notwithstanding their use, this takes place, warm poultices and fomentations must be substituted for them. In severe cases, general bloodletting is sometimes necessary; and in every case, purgatives are useful, and a mild, liquid diet, small in quantity, and slightly nutritious, is the best, as well as the most agreeable. Counter-irritation should be used, if the swelling continues after the active inflammation is subdued.

Sometimes, in this affection, all the symptoms are mitigated, but the disease still remains, and assumes a chronic, or perhaps it would be more proper to call

it a sub-acute, form. This form is not unfrequently seen, without having been preceded by severe inflammation, especially in persons of a scrofulous habit, or those who have a taint of syphilis in the system, or are affected by rheumatism, or have taken mercury freely. We often see it, also, in consequence of injuries of the knee, and particularly of those in which the ligaments have been twisted. The suffering, at the time of the accident, is perhaps slight, and the pain usually subsides altogether in a few hours, and rarely continues more than two or three days. Not long after this, the patient finds that the limb easily becomes tired, and that, when he has used much exercise, there is a slight degree of tenderness about the joint, though but little, if any, pain. This does not come on at any precise period after the injury ; it sometimes occurs within one week of the accident, and at others, not under six.

The inconvenience is, in most cases, so trifling, for some time, that professional advice is not usually sought at an early period. The swelling is rarely considerable at any time in the course of chronic inflammation of the synovial membrane, unless it be complicated with syphilis, gout, or rheumatism. Under such circumstances, the joint will sometimes be not only more swollen, but also more painful. Whether this be universally true or not, I am unable to say ; but I have seen it in several instances, in which sub-acute inflammation of the knee was at first brought on by an injury, and the difficulty kept up and aggravated by one of the diseases just named.

It would seem, then, if this view of the subject

be correct, that where synovial inflammation is modified by syphilis, rheumatism, or gout, it is less severe than the worst species of the acute form of the disease, and more so than that of the chronic. But it may also be added, that when thus modified, it is less likely to terminate in suppuration, and the consequent destruction of the joint.

Much time is required for the successful treatment of this class of morbid affections. The skill of the surgeon is often baffled, by the unwillingness of the patient to submit to the proper remedies; and among these, rest holds a prominent rank. In fact, without it, the other means can do but little.

The lameness is so slight, that the necessary confinement becomes irksome, and yet the least exercise of the limb, or the slightest motion of the joint, in the early stages, is sure to aggravate the difficulty. It is essential then, to insist upon keeping the limb in a state of entire rest at this period.

If there should be any pain, or much tenderness, local bleeding, by leeches or cupping, should be used; the latter is to be preferred, as the blood can in this way be drawn quicker, and it also acts as a counter-irritant. It is usually necessary to resort to bleeding two or three times. This should be followed by the application of blisters, and it will be found, that it is better to let them heal and draw new ones, than to dress them with any irritating application. In this way, they produce more effect on the disease and less disturbance to the system.

At a later period, stimulating applications of various kinds will be beneficial. Among the most important

of these are a mixture of olive oil and sulphuric acid, the tartar emetic ointment, and the ammoniated liniment with the tincture of cantharides. In those cases in which there is reason to think that the patient is affected with scrofula, some preparation of iodine combined with simple cerate may be advantageously employed; either iodine itself, or the hydriodate of soda or potash.

After the disease has been entirely subdued, a great degree of stiffness frequently remains, partly in consequence of want of exercise of the limb, and partly from a thickening of the ligaments. When this is the case, friction and passive motion of the joint should be cautiously tried, but they should be immediately discontinued, if they produce any pain. They may excite inflammation, and the formation of pus, and thus destroy the joint. I have seen cases of this kind, in which amputation became necessary to save the life of the patient. It is true, that by bending the joint powerfully, and rubbing with great freedom, its motions may sometimes be sooner restored, and no bad consequences follow. But it is very certain, that it is a course that is always attended with danger, and one which a skilful and judicious surgeon would never adopt. Moderate and long continued friction should be employed, where any is proper; but it should never be used until the disease is subdued, and it may then aid in removing its effects.

The warm spout bath is also a valuable remedy in giving strength to the limb; it must, however, be used with the same precautions as friction, not to be employed, till the inflammation is gone, and to be laid aside, if it causes any pain.

2d. *Morbid change of structure of the synovial membrane.*

The synovial membrane sometimes undergoes a change of structure of a peculiar character, which is not found to take place in any other part of the body. In fact, it is rarely if ever met with, except in the knee-joint. It consists of a deposition upon the membrane, and an alteration in its organization. This deposition is a pulpy, gelatinous mass, varying from the twelfth of an inch, to an inch in thickness, in which may be seen white membranous lines. It is sometimes of a light gray color, and at others, of a reddish brown.

It is but recently, that we have had any accurate description of this disease, and for our first knowledge of it, we are indebted to Mr. Brodie. Before his time, it was confounded with affections that differed from it in many important particulars.

It attacks children about the age of puberty, more than any other persons, and rarely affects those who have passed the middle age of life. Scrofulous patients are the most disposed to it. Injuries of the joint, and repeated attacks of inflammation, are thought to be among its exciting causes.

Its first symptoms are swelling and stiffness, without pain. It usually begins in one part of the membrane, and gradually extends to the others, till the whole becomes affected. It is, for a long time, attended with but little inconvenience, and there is no change of color in the integuments. The motions of the joint become, by degrees, more limited, and sometimes are altogether destroyed. The swelling

increases, but its form is less regular than that which arises from synovial inflammation. It is also soft and elastic, and on a superficial examination, it may be thought to contain fluid, but on a more careful one, it will be discovered, that there is no fluctuation.

The joint will sometimes remain stiff and swollen for many months, or even years, giving little or no pain to the patient; and, in some few instances, absorption of the effused matter takes place to a very considerable extent, and the limb is, in a great measure, restored to its original condition, a slight degree of stiffness and swelling only remaining. But this is a rare occurrence. It more often happens, after the disease has continued for some time, that inflammation takes place, attended with pain, though the pain is rarely of a very acute and distressing character. The general health, however, is soon affected; abscesses form in the joint, the articulating cartilages ulcerate, and the ends of the bone become carious. The removal of the limb offers the only chance of saving life; in fact, the operation is often necessary, before the disease has gone so far.

This has been the case, in all the instances that I have seen, and even amputation has not always been sufficient to save the patients. Though they may recover from the effects of the operation, they frequently die very soon after, from disease of some of the internal organs, the lungs, more often than any others.

It must be obvious, then, that this is a constitutional disease, and the mode of treatment should be influenced by this consideration. Great attention

should be paid to the diet, which should be mild and nutritious, and to the state of the bowels. Exercise in the open air is important, if it can be taken without moving the limb. In fact, all those means are proper, which are calculated to invigorate the system.

Our local remedies should be such as are likely to prevent the occurrence of inflammation, and if this comes on, those should be employed, which have a tendency to check it. It must, however, be regarded as a disease of a very formidable character; and though it may for a long time remain quiescent, yet when it takes on the inflammatory state, we have but little, if any power, of controlling it. It is true, that there are some authors who do not regard the disease as so incurable as it is generally thought to be, and Mr. Scott has recommended pressure, with great confidence. This, however, has not succeeded in the hands of others; it has excited inflammation and pain, and thus hastened the progress of the complaint.

M. Lisfranc has, more recently, spoken highly of the advantage of moxa, and believes it to be capable of arresting, if not curing, the disease. Though it no doubt deserves to be tried, I should not feel very sanguine of a favorable issue.

Entire rest of the limb, with counter-irritation over the whole swollen surface, seems sometimes to check its progress. From its affinity to scrofula, iodine, in some of its forms, would be perhaps the best counter-irritant. Friction and motion of the joint can be of no advantage, at any period of the complaint, and may hasten the result which it is our object to prevent.

3d. Of ulceration of the cartilages.

The articular cartilages have but a small degree of vascularity. They are, consequently, little liable to disease, but, from the same cause, they are slow to recover when they once become affected.

It has even been doubted by some, whether they are furnished with any vessels; and that peculiar condition in which they are sometimes found, and which is usually regarded as ulceration, has been thought to be a mere mechanical abrasion; their supposed want of vascularity, rendering it impossible for them to be the seat of inflammation.

But the mere fact, that they are capable of growing, as we know they do, with the other parts of the body, renders it certain that they are supplied with blood vessels. A higher degree of organization than they possess would unfit them for the office they are designed to perform; they would readily inflame and suppurate, if they had a greater degree of sensibility and vascularity.

Even as it is, they sometimes become diseased, and ulceration follows. When this process takes place in the soft parts, it is always attended with the secretion of pus, but this is rarely the case when it occurs in the articular cartilages.

The cartilages of the joints may ulcerate, in consequence of a disease of the synovial membrane, or of an affection of the bones, or the cartilages themselves may be the primary seat of the disease. This latter affection, which must be regarded as the true ulceration of the articular cartilages, most often occurs in adults. Individuals, who have been affected

with rheumatism or scrofula, are the most frequent subjects of it. It is attended with but little swelling at any time, unless it be complicated with synovial inflammation; and the joint is rarely, if ever, swollen, at the commencement of the disease. The pain is deep-seated and gnawing, and much increased by pressing the articular cartilages against each other. It is felt before any swelling can be discovered. It is usually referred to one spot, and is more severe at night, than at any other time. In the beginning of the disease, it is very slight, and always relieved by rest, and aggravated by motion. It increases, however, in intensity, as the morbid affection advances, until it becomes very severe, and, in a few weeks from its commencement, a slight swelling may be discovered. This swelling takes place between the bones, and is supposed to be owing to the thickening of the cellular membrane, in consequence of the disease that is going on within the joint.

In some cases, the constitution suffers so much, though the limb is but slightly altered in appearance, that amputation is necessary. If the joint be opened, after the limb is removed, it will probably be found, that the cartilage is ulcerated only to a small extent, without any other morbid appearance, or, at most, there will be, in addition, a small quantity of pus.

In other cases, an abscess is the consequence of this disease. This is followed by an ulceration of the ligaments, and also requires an operation. There is another class of cases, too, in which, after the morbid affection has continued some time, a restorative

process is set up, and a partial recovery takes place. When the cartilage has been destroyed by ulceration, it is never restored, its powers of vitality are so feeble; but when the disease that has been going on in it has been arrested, the ends of the bone frequently unite either in partial or complete ankylosis; that is, either by ligament or bone. The joint, of course, is either partially or wholly stiff, and its motions, consequently, limited to a greater or less extent. But when the disease has not advanced so far, and recovery takes place, though the cartilages have been ulcerated, the limb is often restored almost to its original usefulness.

It is apparent, from what has been said, that this is a formidable disease, and remedies, unfortunately, have not the control over it, that could be wished. In its treatment, great attention should be paid to the general health, by regulating the bowels, and by strict attention to diet. As motion produces so much pain, the joint should be kept entirely at rest; and in order to insure this, the limb should be confined in a hollow splint, extending from the foot to the nates; or, in some other mode, that will entirely preclude all possibility of motion. So important is absolute rest, that some surgeons have relied upon it alone, in the management of the early stages of some of these cases, and have not unfrequently been completely successful.

Bloodletting, either general or local, is rarely required. But if there be reason to believe, that the joint is inflamed from too much motion, or any other cause, topical bleeding will be useful. It seems to

have no power, however, of arresting the ulcerative process, but only the inflammation, which is, as it were, accidentally superadded to it.

Our principal reliance must be in some form of counter-irritation. In mild cases, blisters, kept open by stimulating dressings, may be sufficient, but in more severe ones, resort must be had to issues, moxa, or the actual cautery. Which of these is to be preferred, and in what cases a preference is to be given to one over the others, it is, perhaps, not easy to decide. Issues, made by caustic potash, or other chemical agents, were, till recently, in most general use. Within a few years, however, moxa and the actual cautery have been again brought into practice ; for both of these remedies were in high favor, among the ancients, for diseases of the joints.

The moxa and the actual cautery are probably the best counter-irritants, as they certainly are the most powerful. The former I have used, but not the latter, principally from an apprehension, that it might be difficult to limit its effects. My own experience has taught me, even when issues are to be made about the knee-joint, to be cautious in the selection of the spot upon which they are to be placed. I once saw an abscess produced within the joint, which rendered amputation necessary, by the application of caustic directly over the capsular ligament.

Whatever, therefore, be the agent that is employed, it is safest to apply it at some distance from the articulation, otherwise a degree of inflammation might be excited in the synovial membrane, that would

essentially retard recovery, if it did not altogether prevent it.

It seems to be well established, that the benefit derived from issues is not in proportion to the amount of suppuration which they produce, but is probably more owing to the powerful impression which they make on the part. Admitting the correctness of this opinion, there can hardly be a doubt, that moxa and the actual cautery should be preferred to common issues, in cases of this kind, especially in adults; in children, the milder means may answer.

When the disease has been arrested, the stiffness may sometimes be lessened by gentle friction, passive motion, and the tepid spout bath. These should all be tried cautiously, otherwise they may excite an undue degree of inflammation.

4th. Of the disease of the articulating surfaces of the bones of the knee-joint.

The ends of the bones are sometimes the primary seat of disease. It begins in the cancellous structure, which becomes more vascular, and contains a less proportion of earthy matter than in health. Persons predisposed to scrofula are the most frequent subjects of it, though they are by no means the only ones who are affected by it; and hence it is often called the scrofulous disease of the bones.

It most usually attacks children, and it is rarely met with after adult age. It often comes on in an

insidious manner; a slight pain being occasionally felt in the joint, especially after exercise; and this state of things may continue for some length of time, before any swelling can be perceived. It is frequently attributed to injuries, though their influence in its production has probably been very much overrated. Changes of temperature, and exposure to cold and moisture, have a much greater agency.

When young children are the subjects of it, appearances of disease can usually be detected in other parts of the body; but when the patients have passed the age of puberty, the diseased joint is often the only affected part. After the joint begins to swell, it is not unusual, to find some of the inguinal glands enlarged. The pain, however, continues trifling, and does not become severe, till matter forms within the capsular ligament.

As the joint increases in size,—which it steadily does, though it is sometimes very slow in its progress,—exercise becomes painful, and the patient, with a view of favoring the limb as much as possible, keeps the knee bent, and brings the toes only to the ground in walking. In this way, a permanent state of semi-flexion is produced; and it is a position which is found more comfortable than any other.

The swelling is distinguished by puffiness and elasticity; and though it attains an enormous size, the integuments covering it remain of their natural color. When the tumor is very large, purple veins are seen passing over it, owing, no doubt, to the

interruption of the venous circulation. The swelling, however, seems to be larger than it actually is, in consequence of the emaciation of the limb above and below it.

After the disease has continued for some length of time in the bone, it extends to all the neighboring parts; the cellular and synovial membranes become thickened and diseased, the cartilages ulcerate, and an abscess, perhaps, forms in the joint. When the pus is discharged, either by a natural or artificial opening, a new suppuration may take place, and hectic fever terminate the life of the patient, unless it be saved by an operation. But even this is not always effectual; the system may have received so severe a shock from the disease, that it is unable to rally, and its powers sink under it.

But, on the other hand, it sometimes happens, that, after the pus has been discharged, no new abscess forms; the wound slowly heals, and the morbid action seems to be altogether arrested. But though the patient recovers in this case, the limb is rarely, if ever, restored to its former usefulness. The bones having been carious, and the cartilages ulcerated, the joint is stiff, in a greater or less degree. In some instances, a solid osseous union takes place between the ends of the bones, forming a true ankylosis.

Sometimes, the joint will continue enormously enlarged for many years, without the formation of an abscess. When this is the case, the general health is occasionally so much affected as to require

the removal of the limb; at other times, the system seems to participate but little in the local trouble. It is well ascertained, that, though the bones seem to be swollen, from an early period of the disease, they are, in fact, not enlarged at any time during its progress. If a joint be examined, after its removal, it will be found, that all the parts are in a state of disease, and that the bone is softened to a very considerable extent. It seems, also, to be well settled, that, though the bone is more vascular than in health in the early stages of this affection, it becomes less so in the latter ones; and hence, why the bone, at this period, is so prone to die and exfoliate.

The treatment of this distressing affection must vary somewhat in different cases, though it should not be active in any. The general health should receive our principal attention; and it is doubtful, whether local means have the power of arresting or checking, to any extent, the complaint. The limb must be kept at rest, as motion is sure to aggravate the disease.

Local bleeding should only be used on the occurrence of active inflammation, and then the application of leeches may afford some relief. From the known affinity of this disease of the joint to scrofula, we should not be led to think, that bloodletting could have any favorable influence over it; and experience has fully established the correctness of this opinion.

Counter-irritation, which was formerly so much

employed in this complaint, is now almost wholly laid aside. It is not thought to have any power of preventing suppuration; though blisters are still sometimes used in the chronic form of the disease, merely with the view of retarding its increase in size.

Cold applications are among the best means to be used, when the part is inflamed; if it becomes painful, fomentations should be employed, and mild poultices, when pus is secreted. The abscess should be allowed to open spontaneously; otherwise, an undue degree of inflammation will sometimes come on.

At this advanced period of the disease, an operation is usually required; but if recovery takes place, the limb will, in most cases, be stiff, and anchylosis cannot be accomplished, unless it be kept entirely at rest. Friction and passive motion cannot be safely used at any time.

I have thus noticed four important diseases of the knee-joint, which, though they differ from each other in their nature, symptoms, and method of treatment, are often confounded under the common name of white-swelling. This term was first introduced into surgery by Wiseman, more than a hundred and fifty years ago, and was probably intended to indicate that disease of the bones that has just been noticed. It, by degrees, however, embraced other diseases, until it included all those chronic swellings of the joints, in which there was no discoloration of the skin, and which often terminated in the loss of the

limb or the life of the patient. Though surgeons did not, till recently, know the exact difference in these morbid affections, they soon discovered, that they were not precisely the same; and they therefore made a division of white-swellings,—a very loose and inaccurate one, to be sure,—into the rheumatic and the scrofulous.

It is not, however, so singular, as at first view it may seem to be, that diseases, differing from each other as much as those do of which I have just spoken, should be confounded under a common name. There is a close resemblance in their morbid appearances, when they have advanced to that stage that the removal of the limb is necessary to preserve the life of the patient. In each of them, we find, at this period, that the synovial membrane is thickened, and oftentimes changed in structure, the cartilages ulcerated, the bones carious, and not unfrequently a collection of pus in the cavity of the joint. But, though the mistake might easily be made, it is not the less important to avoid it, as the same treatment is not adapted to all of them. They can be discriminated by careful attention to the diagnostic marks of each; and, though I may not have described them clearly, they nevertheless have a real existence. It was my intention, to trace only the prominent features of these diseases, in the hope of calling your attention to an obscure but important subject, and one which has too long been consigned to unmerited neglect. If I shall be fortunate enough to do this, my purpose will be answered.

Permit me, in conclusion, Mr. President, to congratulate you, and the Fellows of this Society, on the auspicious circumstances under which we have assembled. This institution has been incorporated almost sixty years; and, since its reorganization, in 1803, it has steadily advanced in prosperity and usefulness. Its members have increased from thirty,—which was the whole number at its establishment,—to almost six hundred; and we may indulge the hope, that, before the return of another anniversary, it will find in its ranks every well-educated physician in this Commonwealth.

It was founded for the purpose of raising the standard of medical education, of elevating the profession, and of guarding the public against the arts of the ignorant and designing. It has no sinister purposes to accomplish, and seeks no other aggrandizement than what it gains by increasing the acquirements and respectability of its members. It is capable of exerting a salutary influence on the community and on the profession; and if it fail to do this, it will be because we do not keep in view the objects for which it was established. It may, for a time, be misrepresented and misunderstood; but if the members are true to themselves, and to the great objects for which it was founded, the benefits which it confers on the public will be felt and acknowledged by all. Let us cling, then, with affection, to our time-honored Society, and, by acting up to its principles, we shall make it an instrument of good to our fellow-men, and a means of advancing the dignity and honor of our profession.

While there are many agreeable associations connected with this occasion, it cannot fail, also, to bring with it feelings of a melancholy character. Every year takes from us some of our number; and that which has just drawn to a close has called to their final account several esteemed and respected members of our Society.*

Some of them had passed long lives with an honorable reputation; and, after having devoted themselves faithfully to the interests of humanity, were gathered in a ripe old age, "full of years and full of honors."

Others were in the vigor of manhood, rich in experience, active, faithful and intelligent, diligently exerting the powers of their minds, and diffusing their stores of knowledge for the benefit of their fellow-men. In the midst of their usefulness, they were summoned, by an inscrutable providence, at a moment when their lives seemed to be of the most value to the world. And others, again, were called

* The following Fellows of the Society have died since the publication of the last Annual Discourse, viz.:

Sylvanus Plympton, M. D.,	Woburn,	Æt. 79.
Daniel Brigham, M. D.,	Marlborough,	" 77.
Nehemiah Cleaveland, M. D.,	Topsfield,	" 76.
Hon. Oliver Fiske, M. D.,	Worcester,	" 74.
Richard Hazeltine, M. D.,	Lynn,	" 62.
Joseph Lovell, M. D.,	Washington City,	" 48.
Oren Wright, M. D.,	Pittsfield,	" 46.
John Lummus, M. D.,	Lynn,	" 46.
Anson Bates, M. D.,	Barre,	
Thomas G. Lee, M. D.,	Charlestown,	" 28.
John H. Manning, M. D.,	Ipswich,	" 24.

away when they were just entering on the great theatre of life, young and ardent, full of hope and promise; and thus were blasted, in a moment, the fond expectations of anxious friends. While we lament their loss, let us gratefully cherish their bright example and honorable name.

ARTICLE II.

OBSERVATIONS ON THE INFLUENCE OF STAGNATED WATER AND AIR UPON HEALTH.

BY DANIEL OSGOOD, M. D.,

HONORARY MEMBER OF THE SOCIETY.

EVERY well-ascertained fact, relative to what may be conducive of health or disease, by which the stock of knowledge becomes increased, may be made useful to the art of medicine.

Amongst the external influences capable of affecting the health, is the condition of the water and air, with respect to their being in motion or at rest, in places where the subjects reside. These fluid compounds, when prevented from circulation, and subjected to a certain degree of atmospherical heat, are liable to be decomposed; and their products have proved no less prejudicial to health, than have those from accumulated putrifying animal and vegetable substances.

Cautions, sufficiently numerous, are on record, in

regard to the latter ; whereas, attention has but too seldom been directed to such as arise from stagnated water and air, free from any more than the ordinary admixture of dead organized matters. To serve as a manifestation of the importance of this consideration, the following exposition, in relation to it, of certain changes that have been made in Havana, and their effects on the health of its inhabitants, is offered.

It may be reverted to, though known, that the city, and the bay on its windward side, are surrounded, excepting on the seaboard, by somewhat high land ; that the city is but little higher than the surface of the water, and is enclosed by a wall ; and that the wind generally prevails, in this as in other tropical places, from the eastward. The wall, on every side, until latterly, was so close and high as to impede the free current of air into the streets ; a long expanse of shoal water lay near to the wall on the bay side, the still surface of which was exposed to the heated air of the obstructed atmosphere ; and the streets were kept in such a bad state of repair, that, although they are on a slight declivity towards the bay, much water was always left remaining stagnant in their broken places and hollows, after the frequent rains. Whilst thus circumstanced, the strangers in the city and the confined parts of the harbor were always exposed to be attacked by a violent, inflammatory kind of fever ; and the other inhabitants were likewise subject to attacks of a similar, but more moderate disease. Recently, a great part of the wall, on the windward side of the

city, has been demolished ; and a fence of iron rails now stands in its place. The shoal water, near to the outside of the new fence, is covered by a lengthened wharf, extending along the whole of the commercial shore of the harbor ; and the streets are drained and macadamized. These improvements have prevented such abundant exhalations, as were formerly produced, from taking place ; and during the progress of the alterations thus made, fewer and fewer cases of the fever, heretofore so much dreaded, have arisen. The cases since observed, have taken place only on board of the particular vessels that lie near to the high land at the windward of the harbor, and such others as, being in ballast and neglected, have their holds left unventilated, and foul with bilge water ; or in the still confined and damp parts of the city. Consequently, the disease may be, for the most part, very easily avoided ; and, in future, Havana will probably come to be as much renowned for the salubrity, as it has been for the mildness, of its climate.

These limited observations are respectfully submitted to the attention of the Society, with the hope, that some of its learned members will deduce from them, and other facts in their own possession, such speculative and practical inferences as may be applicable to the present subject.

Havana, Oct. 30, 1836.